

Description of *Calliotropis ceciliae* new species (Gastropoda: Chilodontidae: Calliotropinae) from off Chile

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ABSTRACT

A new species of *Calliotropis* is described from the vicinities of the Concepción Methane Seep Area ($\sim 36^\circ\text{S}$) and from additional material from off Antofagasta (northern Chile, $\sim 22^\circ\text{S}$). It is compared to *C. pelseneri pelseneri* Cernohorsky, 1977, and *C. pelseneri rossiana* Dell, 1990, from the adjacent Antarctic area, which differ notably from the new species by having a thicker supra-peripheral spiral cord, more angulate whorls, and a more lamellose sculpture present in the subspecies *pelseneri*. The new species is also separated from the widespread *C. infundibulum* (Watson, 1879) by having a weaker P1 spiral cord and narrower umbilicus with spiral cords inside. The radula of the new species is also typically calliotropine.

Additional keywords: Seguenzioidea, deep-sea, methane seeps

INTRODUCTION

The genus *Calliotropis* is known to be very widespread and speciose: many new species, mainly from deep water, were described, e.g. from south western Indian Ocean (Vilvens, 2005, 2006), from the Philippines (Poppe et al., 2006), from Australia (Jansen, 1994), and from other areas of Indo-Pacific such as Taiwan, Indonesia, New Caledonia, Fiji and Vanuatu (Vilvens, 2004, 2007).

The deep-water malacofauna of the SE Pacific, and in particular that of Chile, is still poorly known. A survey of the Trochoidea including the description of two new species was recently presented by Vilvens and Sellanes (2006). The new species described in that work come from the bathyal zone (~ 850 m) Concepción Methane Seep Area (CMSA). This area has been proven to be a faunal aggregation “hotspot” that includes about 30 species of molluscs (Sellanes et al., 2008). Many of these species were previously unknown, mainly the chemosymbiotic bivalves and some of the gastropods (reviewed in Sellanes et al., 2008). Five species of the group Trochoidea inhabiting this seep area are currently

identified to specific level: *Bathybembix macdonaldi* (Dall, 1890), *Margarites huloti* Vilvens and Sellanes, 2006, *Otukaia chilena* Rehder, 1971, *O. crustulum* Vilvens and Sellanes, 2006, and *Zetela alphonsi* Vilvens, 2002. An additional species of the group, collected in the vicinities of the same area and in 2001 off Antofagasta, was tentatively assigned to the genus *Calliotropis*. These latter constitute the first records for the genus from off Chile. The geographically closest records are those of Dell (1990), who described or reported some *Calliotropis* species from the adjacent Antarctic area (Ross, Weddell, and Bellingshausen seas).

The present paper aims to describe the new species of *Calliotropis* and to review the congeners for the South-eastern Pacific and adjacent Antarctic areas.

MATERIALS AND METHODS

Material of the present study consists of specimens obtained living (lv) from the dredge hauls performed by R/V VIDAL GORMÁZ during the VG-07 cruise at two stations near the CMSA ($\sim 36^\circ\text{S}$). Additional material was collected off Antofagasta ($22^\circ 48.02'\text{S}$, $70^\circ 36.71'\text{W}$) in 1350 m during 2001 in a R/V SONNE expedition. Abbreviations used are: H: shell height; W: shell width; HA: aperture height; TW: number of teleoconch whorls; spiral cords on teleoconch of the shells are labelled as P1, P2, ... etc., for primary cords (P1 being the most adapical) and S1, S2, ... etc., for secondary cords (S1 being the most adapical). Type specimens are deposited at Natural History Museum of Chile, Santiago (MNHCL), Institut royal des Sciences naturelles de Belgique, Brussels, Belgium (IRSNB), and Muséum national d'Histoire naturelle, Paris, France (MNHN).

SYSTEMATICS

We follow herein the arrangement of Bouchet and Rocroi (2005) for the suprageneric allocation of

Calliotropis, although several authors still prefer to include the latter taxon in the Trochidae, as did Hickman and McLean (1990).

Superfamily Seguenzioidea Verrill, 1884

Family Chilodontidae Wenz, 1938

Subfamily Calliotropinae Hickman and McLean, 1990

Genus *Calliotropis* Seguenza, 1903

Type Species: *Trochus otto* Philippi, 1844 (by original designation) – Pliocene-Pleistocene, Italy.

Calliotropis ceciliae new species
(Figures 1–7, 15–19 Map 1, Table 1)

Description: Shell rather tall for genus (height up to approximately 17.5 mm, width up to 17.9 mm), slightly broader than high, rather thin, conical to weakly cyrtocoidal; spire moderately elevated, height $0.92\times$ to $0.98\times$ width, $2.0\times$ to $2.6\times$ aperture height; umbilicus deep and narrow. Protoconch unknown (damaged in all available specimens).

Teleoconch of up to 6 convex whorls, bearing 3 spiral granular cords and prosocline threads; nodules produced by intersections of cords with axial folds on 3 first whorls; axial threads or folds not connecting nodules on last whorls. Suture visible, impressed, not canaliculated. First teleoconch whorl convex, sculptured by about 20 prosocline smooth riblets, interspace between riblets twice as broad as riblets; primary spiral cords P1 and P3 appearing at about mid-whorl, P3 slightly stronger than P1, both bearing rounded nodules produced by intersection with axial riblets; P2 absent. On second whorl, P1 and P3 stronger, P1 still weaker than P3; P4 appearing at end of whorl, partially covered by successive whorl, with beads smaller and more numerous than those of other cords. On third whorl, nodules of P1 and P3 stronger, slightly blunt sharp; beads of P1 oriented at 45° , beads of P3 horizontally oriented, slightly more numerous than those of P1; beads becoming nodules at end of whorl. On fourth whorl, nodules of P1 slightly stronger and less numerous than those of P3; beads of P4 much smaller and more numerous than those of other cords. On last whorl, P4 peripheral; periphery subangular; P1 weakening, sometimes almost obsolete, and P3 strongest; axial sculpture still visible, much stronger in upper part of whorl; S1 sometimes appearing intermediate between P1 and P3.

Aperture almost circular, with a weak, almost rounded angle at meeting of inner and outer lip; inner lip flanged in a curved arc projecting over umbilicus, partially covering it; parietal lip forming thin, transparent glaze. Columella more or less straight, without tooth, weakly prosocline. Base moderately convex, with 6 subgranular, similar by size, spiral cords; cords not evenly spaced, interspace between about twice to three times as broad as cords; very fine, poorly visible, axial, lamellate threads between cords. Umbilicus narrow, funnel-shaped, diameter 9–13 % of shell width, with very fine crowded axial lamellae and 2, sometimes 3, spiral cords within. Color of

teleoconch pinkish ivory, without maculation. Operculum corneous, multispiral, with a short growing edge. Radula rhipidoglossate; formula ca. $12 + (1) + 3 + 1 + 3 + (1) +$ ca. 12. Rachidian tooth smaller than lateral teeth, with a small, hooded, not elaborately serrate cusp. Three lateral teeth per half row, similar in size and shape, with broad, hooded, serrated cusps. Lateromarginal plate present, with very rudimentary shaft and cusp. Marginal teeth thin, with long shaft and weakly serrated cutting edges; outermost marginal mitten-shaped.

Type Material: Holotype (MNHNCL 4158) (dd), AGOR VIDAL GORMÁZ, stn AGT 06, from type locality; Paratype (MNHNCL 4159) (lv), paratype IRSNB (I.G. 31132) (dd), paratype MNHN (MNHN 21104) (dd), off Antofagasta, $22^\circ 48.02' S$, $70^\circ 36.71' W$, 1350 m; Paratype (MNHNCL 4160) (dd), AGOR VIDAL GORMÁZ, stn AGT 07, $35^\circ 55.06' S$, $73^\circ 30.42' W$, 998–1128 m.

Type Locality: Central Chile, NW of Concepción, $35^\circ 31.48' S$, $73^\circ 22.71' W$, 1100–1300 m, South Pacific Ocean.

Etymology: Named after Professor Dr. Cecilia Osorio, University of Chile, in recognition of her devotion to the study of mollusks, in particular the systematic, biological, and ecological aspects of the Chilean malacofauna.

Remarks: Two of the five available specimens of the new species (one of them being the largest) unfortunately lack their first whorls, giving only an estimated number of whorls. Also, some specimens from off Antofagasta are strongly eroded, making it difficult to count accurately the axial threads on the first whorls.

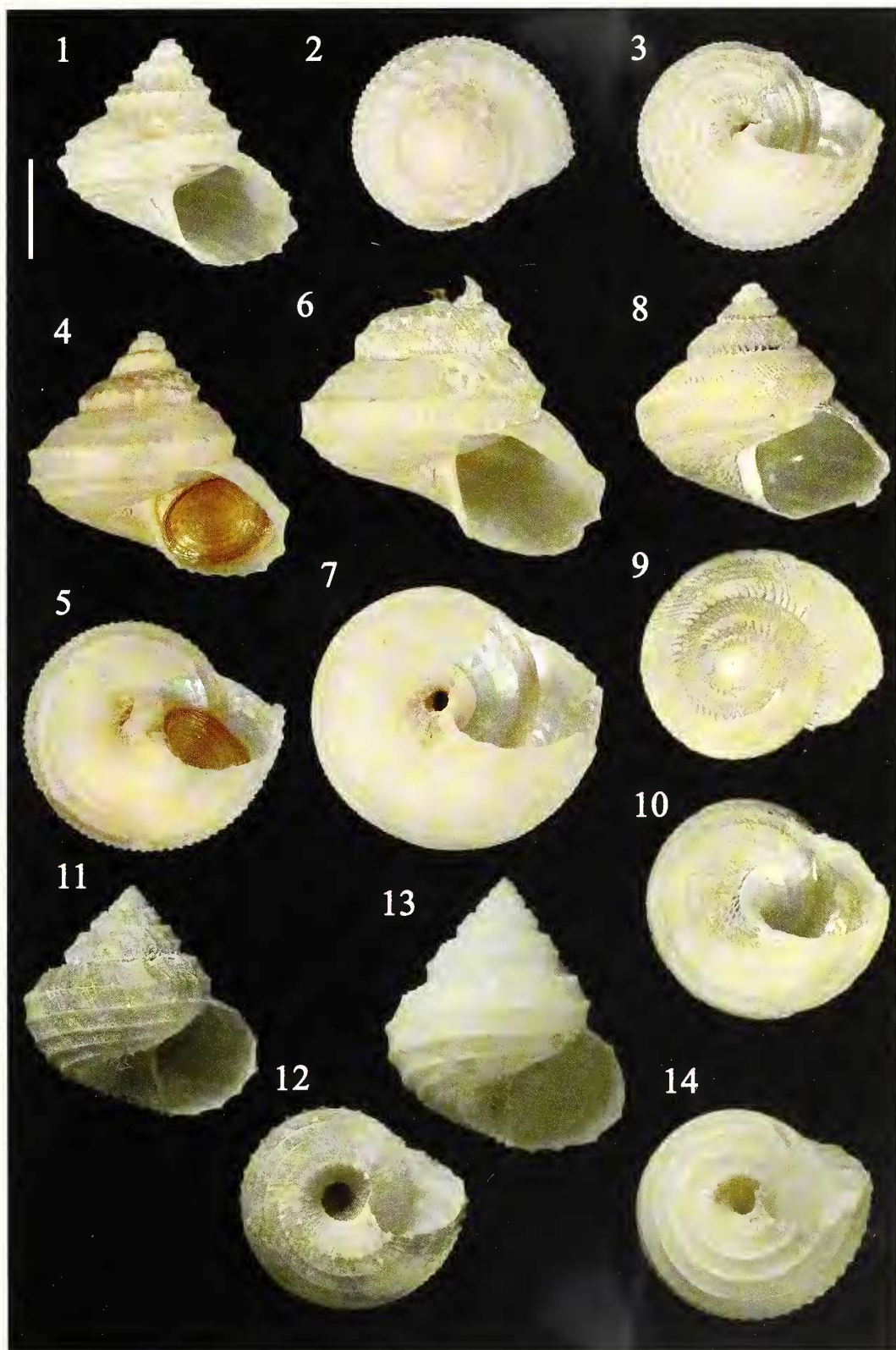
Calliotropis ceciliae new species is close to *C. pelseneeri pelseneeri* Cernohorsky, 1977 (Figures 8–10) from Antarctic seas, but the latter has a much more lamellose surface, a thicker P3 that angulates the whorl, a more convex base with more numerous spiral cords (the two outermost cords are closely spaced and separated from the other cords), and only a single spiral inside the umbilicus.

The new species weakly resembles *Calliotropis pelseneeri rossiana* Dell, 1990, but this subspecies has a P3 especially thick, a more angulate periphery and a subquadrangular aperture, giving a very different general shape to the shell.

Calliotropis ceciliae new species may also be compared to *C. infundibulum* (Watson, 1879) (Figures 11–14) from western Atlantic, Indian-Atlantic Ridge and western Pacific, but this widespread species has a much stronger P1 cord, a wider umbilicus without a spiral cord inside, only 4 (sometimes 5) stronger spiral cords on the base.

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Figures 1–14. *Calliotropis* spp. **1–7.** *Calliotropis ceciliae* new species, Central Chile (scale bar = 5 mm.). **1–3.** Holotype MNHNCL (41584158), 10.4 x 11.3 mm. **4–5.** Paratype MNHNCL (4159), 12.1 x 13.1 mm. **6–7.** Paratype MNHNCL 4160, 17.5 (est.) x 17.9 mm. **8–10.** *Calliotropis pelsenceri pelsenceri* Cernohorsky, 1977, holotype USNM 612941, Weddel Sea, 11.0 x 12.1 mm – photos taken by Smithsonian National Museum of Natural History. **11–14.** *C. infundibulum* (Watson, 1879), syntypes BMNH, Prince Edward Island – photos taken by Phil Hurst (BMNH). **11–12.** BMNH (1887.2.9.325–7), 10.9 x 10.7 mm. **13–14.** BMNH (1887.2.9.328–9), 14.8 x 12.5 mm.



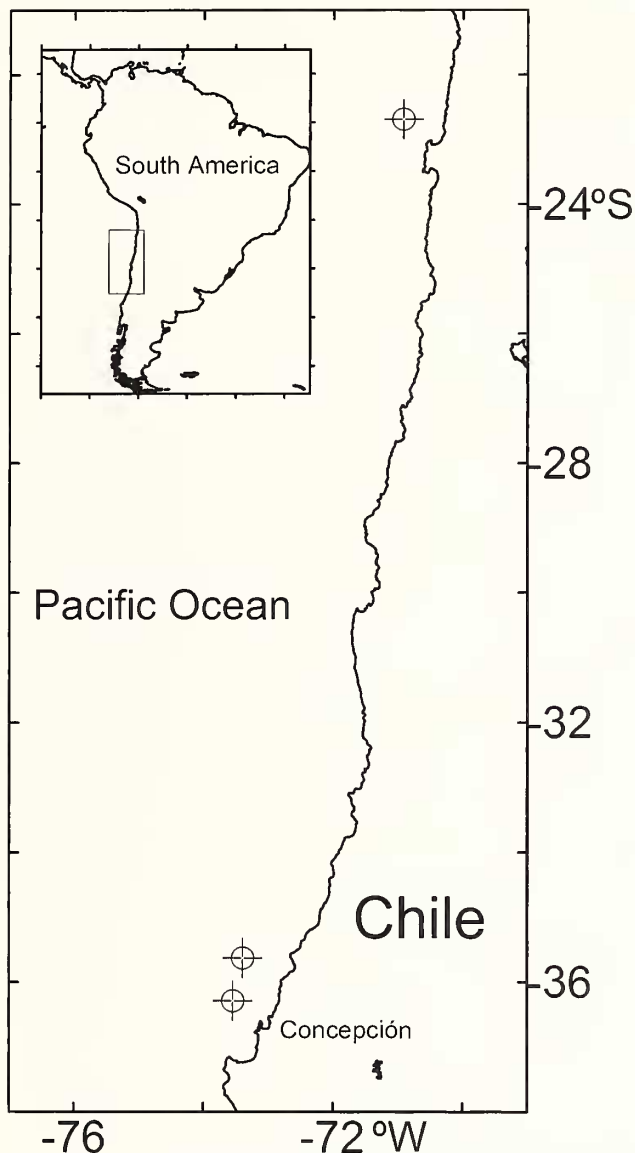
Figures 15–19. *Calliotropis ceciliae* new species, Central Chile (scale bar = 5 mm.), paratype MNHNCL (4159), features of the radula. **15.** Central field : rachidian (r) and lateral (ls) teeth. Scale bar = 100 μ m. **16.** General view : rachidian (r), lateral (ls) and marginal (ms) teeth. Scale bar = 100 μ m. **17.** Details of one row of the central field. **18.** Details of lateral (ls) and marginal (ms) teeth with lateromarginal plate (lmp). **19.** Details of marginal teeth.

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Table 1. *Calliotropis ceciliae*. Shell measurements (mm) of the types.

	TW	H	W	HA	H/W	H/HA
Holotype MNHNCL NW Concepción	5.0	10.4	11.3	4.8	0.92	2.17
Paratype MNHNCL Antofagasta	5.0	12.1	13.1	4.6	0.92	2.63
Paratype IRSNB Antofagasta	4.5	11.8	12.3	5.9	0.96	2.00
Paratype MNHN Antofagasta	4.0	10.7	11.3	5.1	0.95	2.10
Paratype MNHNCL NW Concepción (TW & H estimated)	6.0	17.5	17.9	7.5	0.98	2.33



Map 1. Map of the Chilean coast showing the locations off Antofagasta and NW off Concepción in which *Calliotropis ceciliae* new species has been collected.

institution, and P. Hurst and R. Miguez (BMNH) for the kind sending of photographs of the types of *Calliotropis infundibulum*. The pictures of *C. pelseneeri* were used with permission from the National Museum of Natural History, Smithsonian Institution, Washington, DC.

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